

A.2.14 SWMU 24**Description**

SWMU 24 was identified based on the indicated presence of proposed TEL weathering areas on the Refinery Leaded Burial Map and roping and warning signs in the area. SWMU 24 consists of two suspected TEL weathering areas located north of Tank 306 (east of Tank 9209), at the south end of the ETP in the North Field as depicted on Figure A.2.12.

As summarized on Table A.2.12, 11 borings, 14 soil samples, two monitoring well groundwater samples and one hydropunch groundwater sample have been used to characterize SWMU 24. Additionally, data from SWMU 41, the Phase II OWSS and a surface water/sediment sampling location within Woodbridge Creek (Transect 3) are also included on Table A.2.12 for delineation purposes.

Six borings were installed during the 1st-Phase RFI. Two samples (one surface fill material from SB0053 and one deeper, unsaturated fill material from SB0055) were collected and analyzed for Skinner's List VOCs and SVOCs, lead and TEL. During the full RFI, 12 soil samples were collected from three borings to further characterize this SWMU. Eleven of the soil samples were analyzed for TCL VOCs and SVOCs, TAL metals, and nine of the samples were analyzed for TOL. One sample (S0802C1) was also analyzed for SPLP metals, and one sample (S0802 from seven to nine feet bgs) was analyzed for physical characteristics¹. During the second iteration of the Full RFI, a confirmatory sample (S1022A4) was collected next to SB0053 and analyzed for TOL.

Soils

The following table summarizes the number of soil samples where soil delineation criteria were exceeded within SWMU 24:

Constituents of Concern	Surface Soils (0 to 2 ft) (5 Samples)	Fill Material (>2 ft) (2 Samples)	Native Soils (7 Samples)	Totals (14 Samples)
Benzene	0/4	0/2	1/7	1/13
Other VOCs	0/4	0/2	1/7	1/13
Benzo(a)pyrene	0/4	0/2	0/7	0/13
Other SVOCs	0/4	0/2	0/7	0/13
Lead	1/4	0/2	0/7	1/13
TOL/TEL	1/5	0/1	0/6	1/12
Arsenic	0/3	0/1	2/7	2/11

¹Physical characteristics specified in Appendix A, Task IV of Module III of the HWSA Permit included saturated and unsaturated permeability tests, moisture content, relative permeability, bulk density, porosity, soil sorptive capacity, CEC, TOC, pH, Eh and grain size distribution.

Surface Soils (0 to 2 feet bgs)

Staining and/or odor was noted in surface soils in two of the borings at SWMU 24. Only one surface soil sample contained any COCs in excess of the soil delineation criteria (TOL and lead within SB0053). However, TOL was not detected in the confirmatory sample (S1022A4) that was collected close to this location during the second iteration of the Full RFI.

Fill Materials (>2 feet bgs)

Petroleum-related impacts (e.g., staining, odors, PID readings greater than 100 ppm, etc.) were noted at several boring locations. The fill layer within SWMU 24 ranges in thickness from approximately 5.5 feet (U02401A) to 10.0 feet (S1022), except at soil boring S0802/MW-124 where no fill unit was observed. Aside from naturally-occurring iron, no COCs were detected in excess of the applicable soil delineation criteria in either of the two subsurface fill material samples.

Native Material

A clay/peat layer with a meadow mat component underlies the fill material in this part of the Refinery at depths ranging from approximately 5.5 to 10 feet bgs. No SVOCs, TOL or lead were detected above applicable soil delineation criteria within the native soil at SWMU 24. However, benzene (29.3 mg/kg), xylene (161 mg/kg) and 1,2,4-trimethylbenzene (160 mg/kg) were detected above the applicable soil delineation criteria in one of the native soil samples (S0799F1) collected from a depth of 10 to 10.5 feet bgs. A deeper sample (S0799J4) from this location contained no exceedances of the soil delineation criteria. Aside from naturally-occurring iron, arsenic (55.6 and 43 mg/kg) was the only metal that was detected in excess of the soil delineation criterion in two samples of native material (S0799F1 and S0800F2, respectively). These arsenic levels (55.6 and 43 mg/kg) are well within the normal range for soils, particularly glauconitic soils in the Coastal Plain (Saunders, 2003). Therefore, the site-related soil impacts have been delineated vertically.

As discussed further in Section 6 of the RFI Report, lateral delineation of selected COCs has been completed on a site-wide basis for each Yard. The delineation of these COCs is depicted graphically on the figures provided in Section 6.

Groundwater

Groundwater samples collected in 1997 and 2002 from monitoring wells installed in and around SWMU 24 (MW-124 and MW-32) indicate that VOCs and SVOCs were not detected above the applicable groundwater delineation criteria, although benzene (5 µg/L) and lead (10,400 µg/L) were detected above the applicable groundwater delineation criteria in the 1997 hydropunch sample from this SWMU. The presence of lead in this hydropunch sample is likely attributable to sample collection methods and not representative of groundwater conditions. Neither benzene nor lead was detected in

either of the 2002 groundwater samples from MW-124 and MW-32). However, arsenic (8.7 µg/L) and thallium (69J µg/L) were detected at concentrations above the applicable groundwater delineation criteria in the 2002 sample collected from MW-124. Further discussion of groundwater impacts can be found in Section 8 of the RFI Report.

Surface Water and Sediment

As part of the full RFI, one surface water and sediment sampling transect (Transect 3) was situated downstream of SWMU 24. As summarized on Table A.2.12, and further discussed in Section 9, a number of constituents were detected in excess of the applicable surface water and sediment screening criteria in these surface water and sediment samples, as well as in the background sample(s). However, given that only minimal impacts were observed in the groundwater samples from the two monitoring wells located between SWMU 24 and Woodbridge Creek, it does not appear that SWMU 24 is impacting Woodbridge Creek.

Summary

Lead (436 mg/kg) and TOL (3.68 mg/kg) were detected in one surface soil sample (SB0053) at concentrations above their respective soil delineation criteria. However, this suspected TEL weathering area does not appear to have been actually used for disposal of TEL wastes, as TOL was not detected in the confirmatory sample from this location. The fill layer, which exhibits widespread evidence of stained soils, did not have any exceedances above the applicable soil delineation criteria. Benzene (29.3 mg/kg) and xylenes (161 mg/kg) were detected in excess of the soil delineation criteria with the uppermost portion of the native material underlying the fill. A deeper sample at this location did not have any VOC exceedances.

Arsenic was also detected above the applicable soil delineation criteria in two samples collected from the uppermost native material but not in the deeper native soils. As the exceedances of arsenic delineation criteria in the native materials occur at depth (i.e., 10 to 11 feet bgs), it is likely that these exceedances represent local background arsenic concentrations associated with glauconitic soils. These arsenic concentrations (55.6 and 43 mg/kg) are within the normal range for soils, particularly glauconitic soils in the Coastal Plain (Saunders, 2003).

This area does not appear to have been used as a TEL weathering area based on the absence of TOL/TEL, and the fact that lead was detected in only one sample above the most stringent applicable soil delineation criterion. Nonetheless, institutional controls and/or engineered barriers for site-related impacted soils from the uppermost native unit within SWMU 24 will be considered in the CMS.

Arsenic and thallium were the only COCs detected above the applicable groundwater delineation criteria in groundwater samples collected from two monitoring wells in 2002 at SWMU 24. Potential groundwater impacts from SWMU 24 will also be included in the CMS as part of the site-wide groundwater evaluation.